

## Claims

We claim:

1. A carrier medium comprising program instructions, wherein the program  
5 instructions are executable to implement:  
displaying a display window comprising a plurality of graphical program nodes  
for use in a graphical program;  
wherein the plurality of graphical program nodes comprise a hierarchy of  
graphical program nodes, wherein said hierarchy comprises:  
10 a first plurality of function nodes displayed in the display window,  
wherein each function node corresponds to a respective functionality; and  
a second plurality of property nodes displayed in the display window,  
wherein each property node corresponds to a respective one of at least a subset of the  
plurality of function nodes, wherein each property node is displayed proximate to said  
15 respective one of the at least a subset of the plurality of function nodes.
2. The carrier medium of claim 1,  
wherein each of the first plurality of function nodes comprises a polymorphic  
function node; and  
20 wherein each polymorphic function node corresponds to a respective generic  
functionality, wherein each function node is type-switchable between each of a plurality  
of function node types, and wherein each function node type corresponds to a respective  
specific functionality.
- 25 3. The carrier medium of claim 2,  
wherein each of the first plurality of function nodes has a default function node  
type, and wherein the default function node type corresponds to a respective default  
specific functionality for the function node.

4. The carrier medium of claim 1,  
wherein the first plurality of function nodes are organized in the display window  
in accordance with one or more of:

order of use in a typical graphical program development session;  
5 frequency of use in a typical graphical program development session; and  
functional relationships among the first plurality of function nodes.

5. The carrier medium of claim 1,  
wherein the first plurality of function nodes comprises two or more of:  
10 a channel creation node;  
a read node; and  
a write node.

6. The carrier medium of claim 5,  
15 wherein the first plurality of function nodes further comprises:  
a wait until done node.

7. The carrier medium of claim 5,  
wherein the two or more of the channel creation node, the read node, and the write  
20 node comprise a primary set of function nodes.

8. The carrier medium of claim 7,  
wherein the first plurality of function nodes further comprises one or more of:  
a timing node;  
25 a triggering node;  
a start node;  
a stop node; and  
a clear node.

9. The carrier medium of claim 8,  
wherein the one or more of the timing node, the triggering node, the start node,  
the stop node, and the clear node comprise a secondary set of function nodes; and  
wherein the primary set of function nodes and the secondary set of function nodes  
5 are displayed in the display window in respective groups.

10. The carrier medium of claim 9, wherein, in displaying the primary set of  
function nodes and the secondary set of function nodes in the display window in  
respective groups, the primary set of function nodes is displayed in a first row in the  
10 display window and the secondary set of function nodes is displayed in a second row in  
the display window.

11. The carrier medium of claim 9, wherein, in displaying the primary set of  
function nodes and the secondary set of function nodes in the display window in  
15 respective groups, the primary set of function nodes is displayed in a first column in the  
display window and the secondary set of function nodes is displayed in a second column  
in the display window.

12. The carrier medium of claim 1,  
20 wherein each of the second plurality of property nodes comprises a function  
specific property node corresponding to a respective function; and  
wherein each function specific property node comprises one or more parameters  
for configuring corresponding attributes for the graphical program.

13. The carrier medium of claim 12, wherein the second plurality of property  
25 nodes comprises two or more of:  
a channel property node;  
a timing property node;  
a triggering property node;

a read property node; and  
a write property node.

14. The carrier medium of claim 13, wherein, in each property node being  
5 displayed proximate to the respective one of the at least a subset of the plurality of  
function nodes, each property node is displayed in one of:

a common row with the respective one of the at least a subset of the plurality of  
function nodes; and

a common column with the respective one of the at least a subset of the plurality  
10 of function nodes.

15. The carrier medium of claim 1,

wherein each function node comprises a function node icon, and wherein the  
function node icon comprises a first image;

15 wherein each property node comprises a property node icon and wherein the  
function node icon comprises a second image; and

wherein the second image comprises a version of the first image, indicating the  
correspondence between the property node and the corresponding function node.

20 16. The carrier medium of claim 1, wherein the program instructions are  
further executable to implement:

displaying one or more tool icons in the display window, wherein each tool icon  
represents a respective graphical program development tool, and wherein each tool icon is  
user-selectable to invoke the respective graphical program development tool.

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17. The carrier medium of claim 1, wherein the program instructions are  
further executable to implement:

displaying one or more function palette icons in the display window, wherein each function palette icon represents a respective sub-palette of one or more additional function nodes and/or one or more additional function palettes.

5           18.     The carrier medium of claim 17, wherein the one or more function palette icons are user-selectable to invoke display of one or more of:

          a palette of function nodes related to advanced device configuration;

          a palette of function nodes related to advanced task configuration; and

          a palette of one or more additional sub-palettes comprising miscellaneous  
10   advanced function nodes.

          19.     A graphical program node palette, comprising:

          a display window; and

          a plurality of graphical program nodes for use in a graphical program, wherein the  
15   plurality of graphical program nodes are displayed in the display window;

          wherein the plurality of graphical program nodes comprise a hierarchy of graphical program nodes, wherein said hierarchy comprises:

          a first plurality of function nodes displayed in the display window, wherein each function node corresponds to a respective functionality;

20           a second plurality of property nodes displayed in the display window, wherein each property node corresponds to a respective one of at least a subset of the plurality of function nodes, wherein each property node is displayed proximate to said respective one of the at least a subset of the plurality of function nodes.

25           20.     The graphical program node palette of claim 19, wherein each of the first plurality of function nodes comprises a polymorphic function node; and

          wherein each polymorphic function node corresponds to a respective generic functionality, wherein each function node is type-switchable between each of a plurality

of function node types, and wherein each function node type corresponds to a respective specific functionality.

21. The graphical program node palette of claim 19,  
5 wherein each of the second plurality of property nodes comprises a function specific property node corresponding to a respective function; and  
wherein each function specific property node comprises one or more parameters for configuring corresponding attributes for the graphical program.

10 22. A carrier medium comprising program instructions, wherein the program instructions are executable to implement:

displaying a display window comprising a plurality of graphical program nodes for use in a graphical program;

15 wherein the plurality of graphical program nodes comprise a hierarchy of graphical program nodes, wherein said hierarchy comprises:

a first plurality of polymorphic function nodes displayed in the display window, wherein each polymorphic function node corresponds to a respective generic functionality, wherein each function node is type-switchable between each of a plurality  
20 of function node types, wherein each function node type corresponds to a respective specific functionality; and

a second plurality of property nodes displayed in the display window, wherein each property node corresponds to a respective one of at least a subset of the plurality of polymorphic function nodes, wherein each property node is displayed  
25 proximate to said respective one of the at least a subset of the plurality of polymorphic function nodes.

23. A carrier medium comprising program instructions, wherein the program instructions are executable to implement:

displaying a display window comprising a plurality of graphical program nodes for use in a graphical program;

5 wherein the plurality of graphical program nodes comprise a hierarchy of graphical program nodes, wherein said hierarchy comprises:

a first plurality of function nodes comprising a generic read node and a generic write node; and

a second plurality of property nodes displayed in the display window,  
10 wherein each property node corresponds to one of the generic read node or the generic write node;

wherein the second plurality of property nodes comprises one or more read property nodes associated with the generic read node and one or more write property nodes associated with the generic write node.

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24. A palette of graphical program nodes, comprising:

a display window, operable to display a plurality of graphical program nodes for use in a graphical program;

20 a plurality of polymorphic function nodes displayed in the display window, wherein each polymorphic function node corresponds to a respective generic functionality, wherein each function node is type-switchable between each of a plurality of function node types, wherein each function node type corresponds to a respective specific functionality; and

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25. The palette of claim 24, further comprising:

a plurality of property nodes displayed in the display panel, wherein each property node corresponds to a respective one of at least a subset of the plurality of polymorphic function nodes; and

wherein each property node is displayed proximate to said respective one of the at least a subset of the plurality of polymorphic function nodes.